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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,929	12/03/2003	Wen-Bin Yan	TGR-105US	6987

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RATNERPRESTIA  
P O BOX 980  
VALLEY FORGE, PA 19482-0980

EXAMINER

ALLAWI, ALI

ART UNIT PAPER NUMBER

2877

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/727,929	YAN, WEN-BIN	
	<b>Examiner</b>	<b>Art Unit</b>	
	ALI ALLAWI	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 December 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>See Office Action</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

The information disclosure statements filed on 15 March 2004, and 27 June 2005 have been entered and reference considered by the examiner.

### ***Drawings***

The Drawings filed on 29 March 2004 have been considered by the examiner.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al. (6,636,316) in view of Wilson et al. (2004/0145743).

In regards to claims 1, 5, 9, 12, 13, 18, and 25 Matsumoto et al discloses an apparatus and method for spectroscopically analyzing gas impurities comprising the introduction of a first gas containing the impurity into a first container, and a second gas absent the impurity into a second container, emitting a light from a light source, splitting the light into first and second beams, directing the first and second beams into the first and second containers/cells respectively, and determining the concentration of the impurity in the gas sample. (See Col. 1: 24-67, Col. 2: 6-11, Figure 7) Matsumoto et al.

however does not disclose an apparatus and method for determining the concentration of the impurity through measurement of the difference of the decay rates through ring down spectroscopy of the first and second light beams through the first and second cells, instead, Matsumoto et al. discloses an apparatus and method of detection of the impurity levels using high precision and high sensitivity absorption spectral analysis. As taught by Wilson et al. gas sensing apparatus and method for detecting impurities in the gas samples using resonant optical ring down cavity to measure decay rates of the light beams and comparing them to each other. (See Paragraphs 1, 2, and 16) It is known in the art that spectroscopic absorption spectrum analysis and that of the ring down decay measurement serve the same purpose in applications of gas or sample absorption measurements, and hence, would have been obvious at the time the invention was made to substitute the spectroscopic absorption spectrum discloses by Matsumoto et al. with the ring down decay measurement to arrive at the absorption rate and absorption characteristics of that sample.

In regards to claims 2, 3, 11, and 14, Matsumoto et al. in view of Wilson et al. discloses everything as stated above, Matsumoto et al. further discloses a method in which the configurations and specifications of the first and second cells must be identical and to make the two optical systems operate under identical conditions. Matsumoto et al. also discloses that the optical characteristics of the laser beams are controlled to be identical with each other. (See Col. 1: 53-54, Col. 2: 7-11)

In regards to claims 4, 16 and 17, Matsumoto et al. in view of Wilson et al. discloses everything as stated above, Matsumoto et al. further discloses a laser diode

with the capability to be adjusted to predetermined optical characteristics, along with controlling the laser pulse times or having a continuous laser feed. (See Col. 4: 43-67)

In regards to claims 6-8, and 22-24, Matsumoto et al. in view of Wilson et al. discloses everything as stated above, Matsumoto et al. further discloses two cells in which two gases are provided in which one contains the impurities. Matsumoto et al. does not explicitly disclose the gas status in each cell, however, it is inherent that since the two cells contain the gases, they would have to be filled at some point for measurement and hence they would be filled at some point as well as have gas flow through them at some point to allow for measurement and for correct pressure correlation between the two cells. (See Figure 7, Col 1: 50-67)

In regards to claim 10, Matsumoto et al. in view of Wilson et al. discloses everything as stated above, Matsumoto et al. further discloses a processor coupled to the first and second detector to receive and process the first and second signals and to determine the impurity measurements. (See Figure 7)

In regards to claim 15, Matsumoto et al. in view of Wilson et al. discloses everything as stated above, Matsumoto et al. further discloses a sample gas to be analyzed containing ammonia and water. (See Col. 1: 34, Col. 7: 1-5)

In regards to claims 19-21, Matsumoto et al. in view of Wilson et al. discloses everything as stated above, Matsumoto et al. further discloses an apparatus and method in which the concentration of the impurity is determined by comparing the line shapes of the spectra of the gases taking into consideration their plots and measuring peak limitations and then subtracting one spectra from another for purity

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measurements. Matsumoto et al. does not however disclose these measurements taking place in ring-down cavity set up, however, as stated above, with the understanding of the similarities between the two measurement techniques and their substitutions of one another, it would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the absorption spectrum of Matsumoto et al. to the ring down spectroscopic analysis of Wilson et al. and perform the same measurements in order to achieve the desired results. (See Col. 7: 51-67, Col. 8: 23-67, Figures 2-5)

#### ***Additional Prior Art***

The prior art made of record and not relied upon is considered pertinent to the applicant's disclosure. The references listed in the attached form PTO-892 teach of other prior art that may anticipate or obviate the claims of the applicant's invention.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ali Allawi whose telephone number is **571 272 8285**. The examiner can normally be reached on Monday through Friday, 8am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on **571 272 2800 ext. 77**. The fax phone number for the organization where this application or proceeding is assigned is **571 273 8300**.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



AA  
12/12/2005

  
FOR

Gregory J. Toatley, Jr.  
SPE  
Art Unit 2877